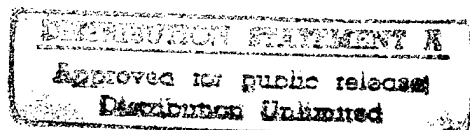


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Beliefs about Children's Illness Among Rural Guatemalan Women¹

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Introduction

In this paper we examine women's beliefs about the causes of childhood illness in rural Guatemala, using information from a qualitative survey. We focus on beliefs about the two major causes of child morbidity and mortality in developing countries: diarrhea and acute respiratory infection (ARI). Our work in this area is motivated by previous demographic research on the role of family characteristics in affecting child mortality, especially in developing countries. Much of this research suggests that some parents are more effective at preventing child mortality than others, even when economic status and living conditions are held constant (Das Gupta, 1990; Pebley, Goldman and Rodríguez, 1996). Since parents' ability to prevent children's illnesses and to seek effective treatment depends in part on their beliefs about the causes of these illnesses, increased knowledge related to parents' beliefs about illness is necessary for a better understanding of how parents make health-related choices.

The objective of the paper is to examine current beliefs about diarrhea and ARI in rural Guatemalan communities, and to compare these beliefs with biomedical and public health perspectives and with the results of earlier anthropological fieldwork. Prior research suggests that substantial differences in beliefs about childhood illnesses between parents and biomedical health care providers (i.e., physicians, nurses, and health promoters) are an important barrier to prevention and treatment of children's illnesses. For example, oral rehydration therapy (ORT) as a treatment for diarrhea often does not make sense to parents since it does not cure (and may increase) diarrhea, even though it prevents mortality from dehydration. Our goal in comparing mothers' beliefs and those of the biomedical and public health community is to determine the degree to which differences in health beliefs in Guatemala constitute a barrier to implementation of biomedically prescribed prevention and treatment measures, and to determine whether there are aspects of popular belief systems which might be incorporated into public health programs. We also would like to determine whether ethnic differences in health beliefs play an important role in observed ethnic differences in the use of biomedical health care. In comparing health beliefs reported in our study with the results of earlier anthropological fieldwork we hope to determine indirectly whether there is evidence of recent changes in health beliefs in rural Guatemala.

Guatemala is the largest country in Central America and one of the poorest countries in Latin America. It has historically been highly socially stratified and has a very unequal distribution of income. Roughly half of the population is indigenous, i.e., descendants of Maya and other pre-conquest groups, who have maintained a separate identity during the past 500 years. The other half, referred to as *ladinos*, speak Spanish, wear European clothing, and identify with the national Guatemalan culture, but are of both indigenous and European origins. The indigenous population is heterogenous and divided into several language groups. As in many societies ethnicity and social class are intertwined, with the indigenous population being generally quite poor while *ladinos* are members of all social classes. Treatment for illness is available from biomedical providers (both through the publicly-financed health care system and through private doctors), from traditional practitioners (midwives, curers, massage-specialists, herbalists, spiritual healers, etc.), and from popular practitioners who often dispense antibiotics and other drugs and give injections often

combined with herbs and other therapies, but do not have biomedical training (see Pebley, Goldman and Rodríguez, 1996; Cosminsky and Scrimshaw, 1980). Use of biomedical health care, even of the free care provided by public clinics, is relatively low among both ladino and indigenous populations, although it is consistently lower in indigenous families (Pebley, Goldman, and Rodríguez, 1996; Warren et al. 1987; MSPAS and INCAP 1989).

In the first section below, we briefly summarize the biomedical perspective on the causes of diarrhea and ARI in developing countries. In the second section, we summarize the findings of anthropological research on health beliefs. The third section is a discussion of the study communities and methods. The fourth section presents our results.

Biomedical Perspective on Diarrhea and ARI

Diarrhea and ARI are two of the leading causes of morbidity and mortality among children, accounting for as much of half of all childhood deaths in the developing world (UNICEF, 1990; Boerma and Van Ginneken, 1992; Guerrant et al., 1990). From the biomedical perspective, both illnesses are syndromes, rather than specific diseases, and each can be caused by a wide variety of infectious agents (Gordon et al., 1964a; Chen, 1983).

Diarrhea

Acute diarrhea is characterized by a high frequency of loose or watery stools often accompanied by vomiting or fever (Benenson, 1995). In public health contexts, the term "diarrhea" also includes dysentery, which is associated with blood in the stools rather than with looseness or frequency (Martines et al., 1993). Children who die from diarrheal infections principally succumb to serious dehydration which can be a consequence of diarrhea. Of all childhood diseases, diarrhea has the most detrimental impact on nutritional status, due largely to decreased absorption of nutrients, decreased food intake, and disturbed metabolism (Rohde, 1986; Chen, 1983). At least 25 pathogenic causes of diarrhea have been identified, many during the last two decades; in developing countries, the major pathogens include bacteria (e.g., enterotoxigenic and enteropathogenic *E. coli*, *Shigella*, *Salmonella*, *Campylobacter jejuni*, and *Vibrio cholerae*), viruses (especially rotavirus), and protozoa (e.g., *Giardia lamblia* and *Cryptosporidium*) (Martines et al., 1993; Coetzer and Kroukamp, 1989). Diarrhea can also be a symptom in infections outside the intestinal tract, such as measles, malaria and respiratory infections. Non-infectious conditions, such as food intolerance, allergies, tumors, medication, immunodeficiency, excessive consumption of some foods, and non-infectious diseases of the gut can also cause diarrhea, but are likely to play a minor role relative to infectious diarrhea among children in poor countries (Edelman and Levine, 1980; Rohde, 1986).

All of the pathogenic agents responsible for diarrhea can be transmitted through fecal-oral pathways — the most common route of transmission for infectious diarrhea. Studies in developing countries suggest that much of the transmission occurs through direct hand-to-mouth contact or through the ingestion of contaminated food and water, via a variety of mechanisms that include improper disposal of human feces and diapers, the presence of animal feces, flies, unwashed hands,

unclean utensils, inadequate cooking of foods and delays in food consumption (Black et al., 1983; Chen, 1983; Coetzer and Kroukamp, 1989; Gordon et al., 1964b). These modes of transmission highlight the importance of hygienic and sanitary household conditions and personal behaviors in diarrhea prevention and control. They also explain the especially high rates of diarrhea among children of weaning age, since the replacement of breastmilk by weaning foods opens up several new avenues of contamination (Gordon et al., 1964b; Black et al., 1983).

Although the great majority of pathogens involved in diarrheal illness can be identified by laboratory test (Benenson, 1995: 140), health workers have devised systems based on symptoms in order to diagnose the source of illness more cost-effectively as well as to develop diagnostic algorithms in settings where laboratory tests are not available (e.g., Guerrant et al., 1990; Cheney and Wong, 1993). The factors considered include the patient's history (e.g., antibiotic use, consumption of seafood, weight loss, duration of diarrheal episode), characteristics of the stools (e.g., the presence of blood or mucus), and other physical signs (e.g., fever, abdominal pain).

Acute Respiratory Infection

Acute respiratory infection (ARI) is subdivided into upper and lower respiratory infections. Symptoms of upper respiratory infection (URI) include runny nose, nasal discharge, sore throat, cough, and earache. Lower respiratory infection (LRI) is a more dangerous condition that includes the following signs: wheezing, rapid respiration, crepitation, retraction, cyanosis, and stridor⁵ (Stansfield and Shepard, 1993; Selwyn, 1990). URI and LRI symptoms can also include fever and cough, and in the case of LRI, vomiting. URI can lead to LRI, but LRI can also be developed without the preceding symptoms of URI. LRI includes several conditions, such as laryngitis (croup), tracheobronchitis, bronchiolitis, and pneumonia.

The most common route of transmission of pathogens is through direct person-to-person contact typically through either inhalation of droplets released through sneezing or coughing, or through contact with hands or articles contaminated with discharge from the nose or throat of an infected person. The vast majority of respiratory infections are due to viruses, with bacteria being responsible for some upper and lower respiratory tract infections. The major pathogenic agents identified in lower respiratory infections among children in developing countries are respiratory syncytial virus (RSV) and two bacteria which are responsible for the majority of severe pneumonia episodes — *Streptococcus pneumonia* and *Haemophilus influenzae* (Selwyn, 1990; Phelan et al., 1994; Campbell, 1995). Several vaccine-preventable illnesses, such as measles, pertussis and diphtheria, can also produce respiratory symptoms and lead to LRI (Stansfield and Shepard, 1993). By definition, all causes of ARI are infectious, although other respiratory conditions such as allergies and asthma may mimic symptoms of ARI.

⁵Crepitation refers to a rattling or crackling sound, while wheezing refers to a whistling sound resulting from difficult breathing. Retraction is a significant in-drawing of the chest when the patient inhales. Cyanosis is a purplish discoloration of the skin due to insufficient oxygen in the blood. Stridor is a harsh vibrating sound made when the air passages are blocked.

While most acute respiratory infections are URI (usually coughs and colds), the vast majority of deaths from ARI are the result of pneumonia (Bulla and Hitze, 1978; Campbell, 1995; Stansfield and Shepard, 1993). Recent research has shown that pneumonia can be reliably identified by the use of two symptoms: rapid breathing and in-drawing of the lower chest wall (Campbell, 1995; Harari et al., 1991). Identification and appropriate treatment of pneumonia has lead to significant decreases in ARI-related mortality rates in children in developing countries (Campbell, 1995). Measles and pertussis continue to be important sources of ARI mortality, although rates have decreased with increasing levels of vaccination (Campbell, 1995).

Causes of Diarrhea and Acute Respiratory Infection

One way to think about causation of diarrhea and ARI from a biomedical perspective is in terms of the actions of viruses, bacteria, and other pathogens within the human body. Another approach to causation, which is likely to be more consistent with the type of answers given by parents during an interview, is to consider factors related to prevention and control of these diseases. Casual observation suggests that even parents who understand the role of microorganisms in causing infectious disease are more likely to say, for example, that their children came down with a cold because they were playing with sick children than to indicate that the cold was caused by a microorganism.

Mosley (1980, 1985) developed a framework which is useful in considering the types of factors which cause morbidity. In this framework, illness is the consequence of exposure to various pathogens. However, resistance and susceptibility can affect whether such exposure results in illness. Resistance includes natural and acquired immunity or partial immunity. Immunity can be acquired either by previous exposure to the microorganism or through immunization. Factors which may increase susceptibility include malnutrition, previous or concurrent illness, and physical or environmental stress (e.g., breathing polluted air, lack of sleep, excessive exposure to the sun).

Our review of the public health literature on prevention of diarrhea in developing countries (Black et al., 1983; World Health Organization, 1989; Martinez et al., 1993; Feachem and Koblinsky, 1984; Feacham, 1984; Esrey, et al., 1985; Rohde, 1986) and in Guatemala (Torún, 1983; Bartlett et al., 1992; Cruz et al., 1994) suggests six types of prevention. The first four are aimed at reducing exposure to pathogens: (1) safe disposal of human waste (especially feces from children who have diarrheal infections); (2) improved water supplies both at the source and in the home; (3) better childrearing practices, such as improved personal hygiene (e.g., handwashing, bathing), child care (e.g., monitoring the child's behavior, including placing objects in the mouth), and feeding practices (e.g., breast rather than bottle feeding); and (4) improved household hygiene, including proper storage and use of water, proper preparation and storage of food, dishwashing, exclusion of animals from the house, better garbage disposal, and handwashing before preparing food. The remaining two measures are related to improving resistance to infection: (1) improved nutrition, and (2) immunization against measles.

In the case of ARI, our review of the literature from developing countries (Stansfield and

Shepard, 1993; Selwyn, 1990; Phelan et al., 1994; Borrero et al., 1990; Cerqueiro et al., 1990; Tupasi et al., 1990) and from Guatemala (Cruz, et al., 1990) suggests seven types of prevention. The goal of the first two is reduced exposure to pathogens: (1) better childrearing practices, such as improved personal hygiene (e.g., handwashing), and better feeding practices (including breastfeeding); and (2) less crowded housing. The other five are aimed at increasing resistance and reducing susceptibility: (1) reduction in cigarette smoking and other sources of air pollution (e.g., smoky cooking fires) in the household; (2) improved nutrition; (3) reduction of the frequency of low birthweight babies⁶, (4) full immunization against measles, pertussis and diphtheria, and (5) reduction of some child care practices, such as swaddling and other practices which restrict the ability to breathe. Some studies suggest that family stress may also increase the risk of ARI by interfering with immune competence (Phelan et al., 1994; Stansfield and Shepard, 1993). On the other hand, while exposure to cold and chilling the body are frequently cited as causes of ARI — possibly because they are thought to reduce resistance — there is little scientific evidence supporting this association (although most of the studies entail modest levels of exposure to cold conditions; Stansfield and Shepard, 1993; Douglas et al., 1968).

Anthropological Research in Guatemala

There is a long history of research by anthropologists on health beliefs in Guatemala (e.g., Adams, 1952; Logan, 1973; Woods, 1977; Cosminsky and Scrimshaw, 1980; Cosminsky, 1987; Tedlock, 1992). Here we review the results of more recent studies, carried out in rural Guatemalan communities in the 1980s, which focus explicitly on health beliefs about children's illnesses (Scrimshaw and Hurtado, 1988; Vielman and Hurtado, 1986; Hurtado and Esquivel, 1986; Villatoro and Hurtado, 1985, Burleigh et al., 1990; Bocaletti et al., undated). Most of these studies relied on qualitative interview methods,⁷ including interviews with key informants and individuals as well as focus groups, rather than on traditional lengthy ethnographic fieldwork.

Diarrhea

Previous research suggests that diarrhea, generally known as *asientos* in Guatemala, is a well recognized illness, although it is sometimes reported as a symptom of other illnesses as well. Two beliefs about the causes of illness underlie the explanatory models of diarrhea in Guatemala. The first is that an imbalance of hot and cold can cause illness, a belief which is common in Latin America, Asia, and, historically, in Europe (Weiss, 1988). Hot and cold qualities apply to foods, as well as to activities and emotional and physical states. These qualities do not necessarily refer to temperature: for example, in Guatemala, beef and sugar are often considered hot, as is pregnancy and the

⁶For example, in a rural Guatemalan community, Bartlett et al. (1991) found that ARI was by far the most common source of morbidity in the neonatal and early postneonatal period of life. Low birth weight babies (<2500 g) had a higher risk of both morbidity and mortality from ARI. The likely mechanism is poorer lung development at the time of birth due to prematurity.

⁷See Scrimshaw and Hurtado (1987, 1988) for a description.

experience of some types of emotions such as anger, while drinking cold water, touching the cold ground and eating "cold" foods are mechanisms through which excessive cold can enter the body. The second belief concerns the function of worms (*lombrices*) in the digestive system: under normal circumstances worms live in a sack in the abdomen and aid in digestion. However, a serious and potentially fatal condition (known as *alboroto de lombrices*) can arise when the worms are disturbed, leave their sack and travel throughout the body.

Research by Hurtado and her colleagues (Hurtado and Esquivel, 1986, Vielman and Hurtado, 1986, and Villatoro and Hurtado, 1985) in several rural Guatemalan ladino, indigenous, and mixed communities is summarized in the taxonomy of causes and symptoms shown in Table 1. The first panel of causes in Table 1 are related to transmission of excess "hot" from mother to child, usually through breastmilk. A mother's breastmilk is hot when she is pregnant, has eaten hot food, or is hot from doing household. A mother's milk can also be hot as a result of psychosocial factors, which cause her to feel hot emotions, such as anger.⁸

As the second panel shows, children can become ill for reasons related to their own food intake as well. For example, eating spoiled food or too much hot or cold food can cause diarrhea. Children can also become ill from not eating food on time or eating too much food in general. These latter causes are related to a syndrome known as *empacho*, common (with some variation in symptoms) throughout Latin America (Kendall et al., 1984; Weller et al., 1993; Schreiber and Homiak, 1981; Martinez and Martin, 1966). *Empacho* typically involves gastro-intestinal upset or indigestion and is frequently thought to result from food getting stuck in the stomach or intestinal tract (Weller et al., 1991, 1993; Bocaletti et al., undated; Vielman and Hurtado, 1986).

Diarrhea may also be related to teething, fallen fontanelle, fallen stomach, or evil eye. Increased incidence of diarrhea during teething is commonly reported throughout the world (Weiss, 1988), and is part of a group of causes of diarrhea associated with children's developmental stages (e.g., crawling, walking). Fontanelle are soft places in a young child's head where the skull has not fully fused. From a biomedical perspective, fontanelles become depressed during serious dehydration, whereas from a rural Guatemalan perspective, they "fall" because a child was dropped, not held properly, or the breast was withdrawn suddenly. Similarly, fallen stomach⁹ is believed to result from children jumping around or being bounced around when carried. The stomach may also swell and fall during the rainy season because children get "too much water" (Hurtado and Esquivel, 1986). The evil eye is another common folk illness. Adults who may (generally inadvertently) give the child the evil eye include pregnant or menstruating women, adults who feel jealous of the child or his/her

⁸For example, Hurtado and Esquivel (1986) describe a mother who said she was suffering from *bilis* (bile) because of disputes with her neighbors, with the result that her daughter became ill with diarrhea and vomiting.

⁹Usually parents refer to fallen *cuajo* rather than fallen stomach (*estómago*). The *cuajo* is thought by some to be a separate organ close to the stomach and by others to be part of the stomach.

parents, or adults who are hot after a day of working in the field. The evil eye appears to be related in many cases to a hot-cold imbalance, in the sense that adults who are excessively "hot" for physical or emotional reasons cause illness to the child.

As noted above, stomach worms which have been disrupted and have left their sack are thought to be a common cause of diarrhea. Worms may become aroused for a variety of reasons. Vielman and Hurtado (1986) found in a lowland ladino community that worms were thought to be aroused primary by *empacho*. As described below, Burleigh et al. (1990) report that, in a highland indigenous community, worms were thought to be the principal mechanism through which hot and cold caused diarrhea and that eating inadequately prepared food also aroused worms.

Cold or chills, entering children through uncovered feet and heads, is thought to be another cause of diarrhea. Once cold enters the body it chills the stomach which either directly causes diarrhea (Vielman and Hurtado, 1986) and/or arouses the worms who in turn cause diarrhea (Burleigh et al., 1990).

The final item listed in Table 1 is not a cause, but a type of diarrhea, commonly recognized as a more serious ailment: dysentery. Dysentery is believed to result from neglect or ineffective treatment of other types of diarrhea (Scrimshaw and Hurtado, 1988).

Table 1 also lists specific symptoms reported to be associated with particular causes of diarrhea. It is intriguing to note that both public health practitioners and rural Guatemalans have detailed systems for diagnosing the specific causes of diarrhea based on symptoms including the color and consistency of diarrhea, and whether or not there is blood or mucus in the stool, although the underlying explanatory models differ.

Burleigh et al.(1990) conducted focus groups in a highland indigenous community in Guatemala. Their questions focused on distinguishing *types* of diarrhea and their causes. Respondents emphasized the importance of color in distinguishing the cause of different types of diarrhea. Burleigh et al. organized their results into a taxonomy, centered around six "causal chains" related to the color and other characteristics of diarrhea. The first two types of diarrhea are caused either by excessive hot or excessive cold. In both cases, the primary mechanism is that the hot-cold imbalance causes the worms to be aroused and leave their sack, which leads to vomiting and dehydration. The third type also involves the worm mechanism, but in this case the worms are aroused by "the irregular preparation of food, serving schedule or the amount consumed rather than the humoral quality of the food (although some women felt that 'heat' was generated...if too much food was consumed)." (Burleigh et al., 1990: 424). Again we note that the notion of inappropriate food preparation or consumption may be related to the idea of *empacho*, although the authors do not use this term.

The fourth type of diarrhea is caused by the *ingestion* of worms, which generally happens when children eat unwashed food (especially fruit) or when "children eat food with dirty hands, inhale dust carrying worms, ingest 'microbes,' or drink from bottles which have not been protected from

flies" (Burleigh et al., 1990: 425). The ingestion of worms does not affect the worms in the stomach, although some of the symptoms of this type of diarrhea appear to be similar to other worm-related diarrhea, e.g., the worms make rumbling noises in the stomach, and they travel throughout the body. The last two types of diarrhea are the same as two of the causes listed in Table 1 and described above: diarrhea due to the evil eye and diarrhea due to teething.

An important difference between Burleigh et al.'s taxonomy and that shown in Table 1 is that Burleigh et al.'s respondents report that almost all types of diarrhea are connected to the actions of worms, either those residing in the stomach or ones that are ingested. In contrast, most other studies of diarrhea in Guatemala focus on a broader range of causes and give greater emphasis to hot-cold imbalances. Research elsewhere in Central America shows similar explanatory models of diarrhea as described in Table 1, although with some variations (Scrimshaw and Hurtado, 1988; Gorter et al., 1995; Kendall et al., 1983). One notable difference is that the taxonomies presented by Scrimshaw and Hurtado (1988) for Costa Rica and Nicaragua include poor hygienic habits as a type or cause of diarrhea and, in a separate study, Gorter et al. (1995) note that mothers report lack of hygiene in Nicaragua as a potential cause of several different types of diarrhea. Studies of children's diarrhea in Lima, Peru (Escobar et al., 1983) and in the highlands of Ecuador (McKee, 1987) also report dirtiness (in both cases, the ingestion of dirt) as a perceived cause of diarrhea among mothers of young children. In contrast, poor hygiene is not included in Hurtado and Esquivel's taxonomy for Guatemala and is mentioned solely as a means of ingesting worms among Burleigh et al.'s respondents.

Acute Respiratory Infection

In contrast to diarrhea, acute respiratory infection (ARI) is not a well-defined illness nor has it received extensive attention from medical anthropologists in Guatemala. ARI consists of a large group of respiratory ailments. In Hurtado and Esquivel's (1986) study of a mixed ladino/indigenous community, they list six different types of respiratory illness which were commonly reported by respondents: common cold (*catarro*), pulmonary cold (*catarro pulmonar*), flu (*grippe*), common cough (*tos*), pulmonary cough (*tos pulmonar*), and whooping cough (*tos ferina*). Fever or "temperature" can either be a symptom associated with these illnesses or a separate illness. Colds were by far the most commonly reported respiratory illness. The most frequently reported causes of respiratory illnesses are related to sudden changes in body temperature, either through being exposed to cold temperature when the body is hot (i.e., getting caught or playing in the rain), or sudden changes in the weather. Hurtado and Esquivel (1986) report that these changes generally are thought to occur because of *descuido* (carelessness or lack of adequate care of children), or *desmando* (violation of the rules, such as not taking a bath when hot).

The causes of respiratory illness described by Hurtado and Esquivel (1986) are remarkably similar to those described in other parts of the world: the Philippines (Nichter and Nichter, 1994), Pakistan (Mull and Mull, 1994; Kundi et al., 1993), Indonesia (Kresno et al., 1994) and Nigeria (Folasade and Tomson, 1996). Causes reported by mothers in each of these countries focus predominantly on exposure to cold, chilling of the body, and sudden changes in climate. This belief

system is common in the U.S. and Europe as well, and is even enshrined in the English word "cold" commonly used to describe minor upper respiratory illnesses.

Study Communities and Methods

Our study was carried out during May and June of 1994, at the beginning of the rainy season, in four rural communities located within three departments of Guatemala: Chimaltenango, Totonicapán, and Jalapa. The communities were chosen because they were relatively small (between 500 and 2500 inhabitants) and varied in ethnicity and language group. Two communities, one predominantly ladino and the other indigenous (Kaqchikel), were chosen in the department of Chimaltenango which is in the western highlands though relatively near to Guatemala City. These two communities are in close proximity to one another, but are quite distinct. We chose one community in each of the other two departments. Totonicapán is a relatively poor indigenous (predominantly K'iche) department in the western highlands, while Jalapa is a predominantly ladino department in eastern Guatemala. To distinguish among the communities, we use the first letter of the department in which they are located (i.e., T for the community in Totonicapán and J for the community in Jalapa), except in the case of the two communities in Chimaltenango where the indigenous community will be called CI and the ladino community CL.

The most important occupation in all four communities is agriculture, although the agricultural systems vary. For example, most residents in the Totonicapán community farm their own (generally small) plot of land while families in the Jalapa community either rent land to farm or sharecrop. The availability of electricity, water and latrines varies across the four communities. The Totonicapán community is the only one of the four without bus transport and is therefore more isolated than the others. It is also the only one of the four without a health post in the community.

In each community, trained ethnographic interviewers interviewed approximately 20 women with young children using an outline of open-ended questions presented in the appendix. These indepth interviews were conducted in Spanish, K'iche or Kaqchikel depending on the preference of the respondent. Interviewers in the indigenous communities were from the same indigenous ethnic group and geographic area, while ladino interviewers carried out the fieldwork in the ladino communities. The fieldwork was organized and supervised by an experienced Guatemalan medical anthropologist (Hurtado) who has been involved in developing rapid assessment procedures for use by anthropologists to assess community health care and nutrition.

Interviews were recorded in two ways: (1) tape recording and (2) abbreviated field notes. The tape recordings were translated into Spanish (for those in indigenous languages) and transcribed into WordPerfect computer files. The fieldwork also included focus groups, interviews with health care providers, and interviews with community informants. However, the results presented in this paper are based exclusively on the interviews with mothers, except where noted.

Respondents were chosen by quota sampling, but with the objective of incorporating all sections of the community. Only mothers with at least one child age five or under were interviewed.

The field team visited houses in the community soliciting participants in the interviews until it had completed at least 20 interviews¹⁰. A total of 87 mothers were interviewed in the four communities. The interview outline included two sets of questions on diarrhea and respiratory illness. As shown in the appendix, the first set concerned the most recent illness experienced by children under age five. Women were asked to describe the symptoms of the most recent illness, its duration and treatment, and their perception of the cause.¹¹ The second set of questions concerned general health beliefs related to diarrhea and respiratory illness. Women were first asked about why children (in their community) get diarrhea, what the symptoms are, and how diarrhea should be treated.¹² In the case of respiratory illness, women were first asked to mention the types of respiratory illness that were common among children in the community.¹³ Interviewers then arbitrarily selected one of the respiratory illnesses reported by the respondent and inquired about causes, symptoms, and treatment for that illness. Respondents were probed repeatedly and encouraged to elaborate their answers and explain any unclear or ambiguous responses.

The analysis presented in this paper is based on the Spanish language transcripts of the interviews. Our objectives are: (1) to determine what symptoms respondents associated with diarrhea and respiratory illnesses and (2) to examine the respondents' beliefs about the causes of these illnesses. We are also interested in community and ethnic variations in symptoms and causes, and therefore carried out the analysis separately for each community. Our analytic method relied on many careful readings of the transcripts, the development and refining of schemes for classifying symptoms and causes, independent coding of individual cases according to these classification schemes by two

¹⁰In order to obtain a sufficiently large sample in one of the communities, all women in the community with children under age five were interviewed, along with several women in a neighboring community.

¹¹The question was: "¿Por qué cree que le dio esta enfermedad a su hijo(a)?" or "Why do you think your child got sick?"

¹²The series of questions began: "Ahora quiero que hablemos de algo de lo que los niños se enferman seguido: la diarrea o asientos. ¿Por qué les da diarrea?" or "Now I want to talk about something that children get sick from frequently: diarrhea. Why do children get diarrhea?"

¹³ The question began: "Ya hablamos de los asientos. Ahora quisiera que me dijera ¿qué enfermedades del pecho o los pulmones les dan a los niños aquí en (la comunidad)?" or "We have already talked about diarrhea. Now I would like you to tell me what chest or lung illnesses children in (this community) get sick from?"

researchers (Pebley and Goldman)¹⁴, and a comparison of the results of this coding with an independent analysis of cases, and of field notes, carried out by a third researcher (Hurtado)¹⁵. Our goal was to attempt to minimize the effects of researcher bias in classifying responses. The results presented here are the consolidated findings from both sets of analyses.

The results are presented in three sections. The first describes women's responses to the general questions about the symptoms and causes of diarrhea. The second section presents comparable responses for respiratory illness. In the third section we describe women's experiences during the most recent time their child was sick with any type of illness.

Symptoms and Causes of Diarrhea

Symptoms

In order to determine the extent to which respondents appear to be talking about the same illness when referring to diarrhea, as well as to compare beliefs reported in our study with those in the biomedical and anthropological literatures, we began the analysis by examining the reported symptoms associated with diarrhea. It is important to keep in mind that the categorization of symptoms (as well as of causes) presented here is derived solely from women's responses, rather than from a set of categories developed *a priori*.

Alongside the symptoms of diarrhea, shown in Table 2, we present the frequencies with which the symptoms were reported in the transcripts. Since these counts are based on qualitative reports, and even experienced researchers working with a consistent framework can disagree on classifications, these counts are intended only as a rough guide.¹⁶ In addition, because the sample

¹⁴After independently constructing tally sheets for symptoms and causes, reading the transcripts, and coding the responses, Pebley and Goldman compared findings and jointly revised the tally sheets. The tally sheets included broad categories of symptoms and cause (e.g., "cold" for causes) together with specific subcategories (e.g., eating cold food, drinking cold water, and getting wet in the rain). These subcategories in tally sheets for causes included both simple explanations and more complex causal pathways. After constructing these revised tally sheets, Pebley and Goldman reread the transcripts and recoded responses independently. A comparison of their results indicated a high degree of consistency. Inconsistencies generally resulted from ambiguous responses or, occasionally, disagreement on appropriate classification.

¹⁵Hurtado's methods included both the type of tally and classification procedures used by the other two authors, and a more detailed analysis of each individual case.

¹⁶Of course, the same caveat applies to a survey based on precoded questions. However, in this case, the researcher is often unaware of the ambiguity underlying the response since the interviewer determines how to code the answer.

sizes in this study are small, relatively large differences among categories typically involve only several respondents.

The first category, stool characteristics, includes the color and consistency of the stool as well as whether it contains mucus. By a fair margin, the most common answer in this category in all communities was that diarrhea is associated with watery stools. Contrary to our expectation based on Burleigh et al.'s (1990) study, women were less likely to mention the color of diarrhea than its watery consistency, but many did mention that diarrhea is associated with green, yellow or white stools. Part of the reason for the difference between our results and Burleigh et al.'s is that the latter study explicitly asked about the color of diarrhea whereas we asked more generally for symptoms. Women in the indigenous communities were considerably more likely to mention color than women in ladino communities.

The majority of responses in the second category refer to the fact that children defecate more frequently when they have diarrhea, although some women mentioned other characteristics such as the fact that children soil their clothes. The primary symptom mentioned in the third category, stomach symptoms, is stomachache ("dolor del estómago"). Only three women mentioned stomach rumblings ("ruido") which is reported in earlier work to be associated with noise made by the stomach worms as they move through the body.

We have labelled the fourth category *dehydration* because, from the biomedical perspective, these symptoms are clear signs of dehydration. This category contains the highest frequency of reported symptoms, suggesting that women in these villages frequently see symptoms of dehydration in children with diarrhea. This is not to say, however, that the respondents believe that these particular symptoms are signs of dehydration. Indeed, only three women mentioned dehydration or dryness, *per se*. Rather, what is important from a public health and health education perspective is that women notice these symptoms and commonly associate them with diarrheal illness. The reported symptoms include: dry mouth or thirst, thinness of the child (due to loss of water and body fat), sunken eyes, paleness or whiteness of the skin, wane or disfigured face, and fallen fontanelles. These are all symptoms recognized by WHO as indications of serious dehydration in children with diarrhea (World Health Organization, 1989). The most commonly reported symptom in this category for the two ladino communities is sunken eyes. In community CI, paleness was most commonly reported, and in T, thinness was the most frequent response.

Relatively few women reported other physical symptoms, such as nausea, vomiting, and fever. However, behavioral symptoms were mentioned frequently. The most common behavioral symptoms were anorexia (the child does not eat or does not want to eat) and that the child becomes sad, looks bad or ill, does not act normal, or is not happy. Women in CI also commonly reported that children cry or scream. One additional behavioral symptom mentioned by at least several respondents refers to listlessness and apathy of the child. Overall, reported symptoms tended to be similar across the four communities.

In general the symptoms of diarrhea reported by women in our study are consistent with the

biomedical perspective on the symptoms of diarrhea. The most commonly reported types of symptoms were those which public health workers recognize as related to diarrhea and dehydration. The other major symptoms included changes in a child's behavior, changes in the stool characteristics (primarily watery diarrhea), and changes in the frequency of defecation (very frequent diarrhea).

The symptoms described by our respondents are also quite similar to those in previous anthropological research, although there are some exceptions. In particular, in contrast to Burleigh et al.'s study, women in our interviews did not mention excretion of worms as a symptom. Our respondents also failed to mention flatulence or feelings of fullness, as in Hurtado and Esquivel's (1986) taxonomy. We also found less emphasis on the color of diarrhea, although, as noted above, this may result in part from the absence of specific questions or prompts concerning color in our interviews.

Causes

Most causal explanations offered by respondents can be divided into two major groups: (1) a interrelated set of causes involving cold (either as temperature or as a quality), stomach worms, and/or eating and (2) causes related to dirtiness or lack of hygiene. Some women offered both types of explanations. It is important to note that alternative explanations are not contradictory, since women often believe that there are several different types of diarrhea with different causes. The first set of causes are presented in Figure 1, as a set of five causal paths (which are not mutually exclusive). The numbers after each causal path represent the counts of women who described the particular pathway in each community. Thus, for path (A), the numbers of respondents giving this answer in each community are as follows: 11 in CI, 7 in T, 2 in J, and 8 in CL, for a total of 28 women in all four communities. The number of respondents giving any of these five explanations related to cold, stomach worms and eating is 16 in CI, 10 in T, 14 in J, and 17 in CL, yielding an overall total of 57 out of 87 or about two-thirds of respondents in the four communities.

We present these five causes as an interrelated group because our analysis suggests that cold, eating certain things or in certain ways, and the actions of stomach worms are often linked in women's responses about the causes of diarrhea. Because of variation in the amount of detail individual women provided about their beliefs, we speculate that some women's responses (e.g., cold weather causes diarrhea) may be simplified versions of more complex beliefs (e.g., cold weather causes diarrhea *because* it arouses stomach worms or *because* it chills the stomach), although other apparently simplified responses may actually be complete explanations of the respondent's beliefs. There is no way to distinguish between the two possibilities. It is also important to bear in mind that some women gave multiple causes for diarrhea which are counted separately in the results presented below.

The first set of causal explanations in Figure 1, given by 28 women, is related to becoming chilled or wet and/or to cold and rainy weather. A common response in this group is that cold and wet themselves cause diarrhea. Children can also get cold by taking a bath or playing in water. A typical explanation was:

I say that they [children] get diarrhea like all children because they don't notice that it is raining and they get wet. CI-10

Some women specify that cold and wet weather cause diarrhea by chilling (or sometimes swelling) the stomach. For example:

...it's raining right now and they walk around without shoes and without a sweater. They get (catch) cold in their stomach, for this reason they get diarrhea... CL-17

...they don't change [their clothes] when they get wet, their stomachs get swollen, like now when its already begun to rain, if we don't take care of them this will give them diarrhea because they get wet. T-5.

Other women describe a more complicated mechanism through which cold chills the stomach and arouses the stomach worms:

Also because of the cold and the water [rain] the stomach gets cold. The stomach worms become aroused; this is what causes diarrhea. CI-15

A final group are women who do not mention chilling of the stomach, but say that cold and/or wetness or cold/wet weather directly arouses stomach worms. For example:

Now [the rainy season] is the time when they get it [diarrhea], because it bothers the stomach worms, they say....Because it is beginning to rain, they say. [The worms] become aroused and since they [the children] walk around wet, [the worms] get aroused because they don't like wetness.... J-9.

Panel B shows that 13 women described a second set of causal pathways. In this case, the process starts with eating cold, or "certain" (unspecified), foods or eating fruits (especially mangos which are considered cold by the respondents who mentioned them).¹⁷ As in the case of panel A, eating these foods can cause diarrhea directly, or by chilling the stomach, by chilling the stomach and arousing the stomach worms, or simply by arousing stomach worms. Below are examples of these beliefs:

....when they eat something cold....like when there is fruit, they eat a lot and it makes them sick, it gives them diarrhea. CL-11

¹⁷Rosenthal(1987) notes that there is considerable variation across villages in the classification of foods as hot or cold. For example, she notes that in a highland Kaqchikel community in Guatemala, mango is considered hot (although most fruits and vegetables are considered cold). Hot-cold classification can also depend on the ripeness of the fruit: the same fruit can be cold when it is green or just ripe, but hot when it become over-ripe.

Things that they eat that make them sick. [Interviewer: Like what things make them sick?] Chicken, because chicken is cold. CL-16

my mother-in-law tells me...that they went every day and ate a lot of mangos, so she told me that he was chilled... so I said to them that they shouldn't continue eating mangos because they were going to give them diarrhea. J-1.

...they eat cold things and the stomach worms don't like that. So [the worms] get aroused. That's when they give them stomachaches and diarrhea... CI-19.

...its because of eating green peaches, because of that the stomach worms get aroused. T-6.

As previous anthropological research has shown, children are also believed to get sick because of hot-cold imbalances in their mothers caused by eating too many cold things, as the following example shows:

...sometimes I eat cold foods, coffee (*agua café*), cole vegetables (*coles*). This is cold so it makes my baby sick. CI-5.

A total of 10 women expressed the belief that worms cause diarrhea without stating how the worms become aroused. Many of these responses consisted of "because of stomach worms," or "because stomach worms become aroused." However, one respondent, who called worms *parásitos* (parasites) rather than *lombrices*, offered the following explanation:

...the parasites are aroused...because the parasites are no longer in their [proper] place, they travel throughout the body. [Interviewer: This is why they get diarrhea?] Yes, and the children don't eat because the parasites are no longer in their place, there is no one to receive the food. CI-11.

Another set of explanations, shown in panel D, relates to the pace or amount of eating. Children who eat too much, not at the right pace or are not fed on time can either get diarrhea for this reason or through the mechanism of chilling or swelling the stomach. This cause is also mentioned by Hurtado and Esquivel (1986) and appears to be similar to the descriptions of *empacho* in other work (Kendall et al., 1984; Scrimshaw and Hurtado, 1988), although only two women (in community J) mentioned *empacho* in this part of the interview.

The final set of causes in Figure 1 relate to eating things that make one sick, either in general or more specifically, fruit. Although responses in these categories did not make any reference to cold or hot-cold imbalance, some of them may implicitly refer to these ideas. For example, women who mentioned eating bad things or things that make one sick could have been referring either to foods with cold (or hot) qualities or to foods that make children sick for other reasons (over or under cooked, too spicy, spoiled, etc.); similarly, many fruits are thought to have cold qualities. It is also

possible that fruit — especially green or overripe fruit — is thought to cause diarrhea for physiological reasons that are in accordance with public health beliefs. For these responses, more thorough probing may have produced less ambiguous results.

To the extent that respondents in our interviews associate diarrhea with hot-cold imbalances, it is almost always associated with excess cold rather than both excess hot and excess cold. A few respondents suggested that children could get diarrhea from excessive exposure to heat or sun, but they did not link this heat with stomach worms. The emphasis on cold and wet conditions may have been exaggerated to some degree because the interviews were taking place in the rainy season where conditions are generally cold and wet. We speculate that if we had carried out the interviews before the start of the rainy season, when conditions are hot, the majority of women would still have given responses related to cold, but more would have given hot and excessive sun as causes.

Differences among communities in the frequency of reporting these causes related to cold, worms and food are small, except in the case of the indigenous community in Totonicapán (community T). Although respondents here are about as likely to say that cold and wet (panel A) and eating cold things (panel B) cause diarrhea, they are less likely to give the other explanations in Figure 1.

The second broad group of causes is related to dirtiness or lack of hygiene. The types of causes mentioned in this group are shown in Table 3. In the top row of Table 3, we present the number of women who gave at least one response related to dirtiness. Overall, 52 or over half of respondents gave an answer related to dirtiness, a number which is similar to the number (57) that gave explanations related to cold, food, or worms. Subsequent rows present the number of women giving more narrowly defined causes related to dirtiness. The numbers do not add up to the total because women often gave more than one of these causes. Examples of explanations related to lack of hygiene include:

Its because of the dirtiness, because of not washing one's hands and not bathing, because of not washing clothes, that's why they get sick. T-2.

They get diarrhea I think maybe when children are not taken care of, they go out in the dirt, maybe they eat the dirt, since we don't watch how the children are crawling around... CI-4.

The most common types of lack of cleanliness that women cited are children putting dirty things in their mouths or eating dirty things (including dirt, sand, garbage, discarded fruit, anything on the floor), and children not washing or being washed adequately. Burleigh et al.'s (1990) respondents said that eating unwashed fruit and eating with dirty hands caused diarrhea because children ingested worms by these means. Although some of our respondents may have been thinking about similar mechanisms, there is little indication in the responses they gave. Only one respondent mentioned children eating fruit with worms (*gusanos* in this case, rather than *lombrices* which is the word used to describe stomach worms). Five women did mention microbes (*microbios*) or infection,

but it is hard to know whether they were referring to the types of worms that Burleigh et al. (1990) describe or to biomedical pathogens of diarrheal disease (or to neither).

Dirtiness-related causes, especially eating dirty things or putting them in one's mouth, touching and playing with dirty things, and not washing adequately are more frequently cited in the indigenous than in the ladino communities. *A priori* we might have expected ladino respondents to be more likely to give dirtiness-related explanations because they are more likely to have had some education, to know about the germ theory of disease, and to be cognizant of public health messages, as well as to hold less traditional views about illness-causation. We speculate that there are at least two reasons for the higher frequency of dirtiness-related responses in the indigenous communities. First, given the greater poverty of the indigenous population, children may in fact be more likely to be exposed to dirty conditions in indigenous communities, even though all four of the communities in which this study was conducted were relatively poor. For example, households in indigenous communities are more likely to have dirt floors and are less likely to have houses built from good materials or to have running water. A second factor may have been the activities of the water program in the indigenous communities, particularly in community T. The water program is a national program through which local communities organize committees of community leaders, with outside help, to identify and develop a clean local source of water. Water committees also work to solicit support from community members in investing time and money to install piping and taps to provide a clean water supply. As part of their efforts, they educate local residents about the necessity for clean water and its public health benefits. A water committee was active in community T during this study.¹⁸

Aside from the group of explanations related to cold, stomach worms, and eating, and those related to dirtiness, several respondents also offered a variety of other explanations. When responding to questions about causes of diarrhea, surprisingly few women mentioned folk remedies often cited in the literature such as evil eye (mentioned by 1 woman), *empacho* (2 women) and fallen fontanelle (1 woman). Although only three women mentioned diarrhea associated with teething, several women also mentioned other forms of diarrhea associated with particular developmental stages, such as when children begin to walk, crawl or talk. A few women gave other explanations including microbes or infection (5 women)¹⁹ and parasites and amoebas (4 women).

¹⁸At the time of the interviews, community J also had a water committee working for the introduction of piped water in the houses. Lack of water has been a major concern in this community and has involved serious conflicts with a neighboring community. Although women did not mention this problem in their responses about causes of diarrhea, several providers in community J identified water shortages as an important cause of diarrhea.

¹⁹In a study of childhood diarrhea in Peru, Escobar et al. (1983) note that mothers who reported that their infant's diarrhea was due to *infection* or *microbes* rarely knew the meaning of infection; rather, they argue, use of the word *infection* represents the adoption of a Western medical term by a traditional culture. Similarly, McKee (1987) notes that use of *infection* in Highland Ecuador does not indicate acceptance of the germ theory nor of modern principles of hygiene.

About 20 women in the four communities explicitly or implicitly responded that children get diarrhea because parents do not take adequate care of them ("*por descuido*"). Several mothers specifically said that their own lack of adequate care for children made the children sick. When the interviewer probed, most went on to define lack of care. For example:

I think sometimes that for one thing, its lack of care on the part of the mother by not giving [children] things that are washed, not washing their hands before they eat something. CL-8.

We don't know how to take care of them [the children]. [Interviewer: do you think this is true in this village?] Yes....like we don't take care of them, we don't watch what they eat...like I have heard that they have to wash their hands and that they shouldn't eat things which are not good for them, that's why I say this. CI-12.

One woman suggested that the problem is that mothers are busy and don't have enough time to walk around after their crawling or walking toddlers and keep them from picking up things and putting them into their mouths.²⁰

Our results on the causes of diarrhea also provide interesting clues into how indigenous and ladino women view one another, although we did not ask any questions about ethnic differences or differences among communities. The two communities CI and CL are located about 20 km. apart along the same road. Although one community is ladino and the other indigenous, they have strong economic ties because of proximity. In response to the question on why children get diarrhea, an indigenous respondent in CI observed:

If we took care of our children like the ladinos, like them, and they have servants to take care of the children so that they don't pick up dirt and so that they don't grab other dirty things. And with us being poor there isn't money to pay servants to take care of our children so that they don't pick up dirt and so that they don't grab dirty things...Its because of that that children become sick..... CI-7.

No ladino in CL mentioned made any explicit contrast between the ethnic groups or communities. However, one woman, on being prompted about whether there were other reasons children got diarrhea in CL, said:

One cannot say that its because of dirtiness because things around here are more neat and clean than in other places where you see garbage dumps and everything. By contrast, around here you don't see garbage dumps anywhere. CL-15.

²⁰Since transmission of germs to toddlers through this mechanism is a common problem especially in unsanitary environments, Torún(1983) proposed the construction of playpens out of local materials as a public health measure in Guatemala.

However, it should be noted that this respondent did not say explicitly to what other places she was referring, and may have been talking in general terms.

A respondent in the other indigenous community, T, also volunteered a comparison between ladino and indigenous children. The interviewer was asking about symptoms of diarrhea and prompting the woman by asking whether children look the same when they have diarrhea as when they do not. The woman responded:

No, they don't look the same, they look bad and like skin and bones, since the diarrhea makes them very sick. So the child looks sick, no longer looks like ladinos,²¹ they don't look well anymore...By contrast, ladinos look good, ladino children look fat but when they get sick it makes them look bad. T-18.

To summarize, respondents interviewed in this study gave many of the same causes for diarrhea described in the anthropological literature, in particular those causes related to cold, worms, and eating. Other folk illnesses, such as the evil eye and *empacho*, were only rarely mentioned. In contrast to earlier anthropological work in Guatemala, many respondents — especially women in indigenous communities — said that dirtiness is an important cause of diarrhea. As many medical anthropologists have noted in the past, the cluster of explanations related to cold, worms and eating reflects underlying beliefs about physiology which are sharply different from those of the biomedical perspective. Dirtiness as a cause, however, is much closer to the biomedical notion of the transmission of pathogens through fecal-oral contamination, even though the specific mechanisms by which women believe dirtiness causes diarrhea may be quite different.

Symptoms and Causes of Respiratory Illness

Types of Respiratory Illnesses and Symptoms

Because the term "respiratory illness" includes a wide range of ailments and would not be easily understood by most women in our study, we began this section of the interview by asking respondents to describe the types of illnesses of the chest or lungs that are common in their communities. The reference to chest or lungs was chosen because of our interest in lower respiratory illness. Responses are shown in Table 4. A few women in each community could not think of (or would not report) any illness of the chest or lungs, even after prompting.

By far, the most common respiratory illness reported was cough²² (mentioned by 45 women) followed by fever/temperature (26 women) and bronchitis (22 women). Table 4 shows two important differences between the indigenous and ladino communities. First, highly medicalized terms like

²¹The respondent used a derogatory word for ladino in K'iche.

²²In community T, some women reported a syndrome related to cough which involved frequent coughing, vomiting because of the cough, fever and diarrhea.

bronchitis and broncopneumonia were used almost exclusively by women in the ladino communities. We suspect that this occurred because ladinos generally have more contact with physicians and are more likely to have heard a doctor or someone else use one of these terms. Language may also have been a barrier to use of these Spanish terms in indigenous languages, although technical words in Spanish are frequently used by people speaking K'iche and Kaqchikel. The second difference by ethnicity is that indigenous respondents are considerably more likely to use the words cough and fever/temperature than ladinos. Again, part of the reason may be due to language differences, although cough is also mentioned by several ladino respondents. Flu and pneumonia are mentioned more often in communities T and J, although there is no apparent reason for these ailments to be more prevalent in these two communities. As with the other counts based on small numbers of interviews, these differences may be due to random variation.

After asking the respondent to list chest and lung illnesses that occur in the community, the interviewer arbitrarily selected one of the illnesses listed by the respondent and asked about symptoms and causes. As a result, different respondents reported on the symptoms and causes of different illnesses and the numbers of women reporting on several of the illnesses are quite small (as shown in the first row of Table 5). We summarize symptoms reported for bronchitis, cough, cold, flu, broncopneumonia, and pneumonia for respondents who were asked about each illness. As might be expected, in the case of the illness "cough", the most commonly reported symptom was coughing. Other symptoms included sore throat, mucus or phlegm, fever or temperature, headache, getting red (from fever), crying, and anorexia (the child does not eat or does not want to eat). Less commonly reported symptoms include sneezing, noise in the chest (*hervor de pecho*), headache, lethargy, teary eyes, nausea, chest pains and inability to sleep. Symptoms reported for colds and the flu appear to be similar (although sample sizes are small for both illnesses). The symptoms for bronchitis and broncopneumonia (only three women were asked about the latter) appear to include more chest related symptoms such as difficulty breathing and noise in the chest, although symptoms like cough and fever (along with noise in the chest) are the most commonly reported for these illnesses as well. Although only four women provided symptoms for pneumonia, these symptoms are more likely to include chest and lung symptoms, as well as apathy. Some women mentioned the fact that other respiratory illnesses could lead to pneumonia and that pneumonia was dangerous. In general, symptoms reported for respiratory illnesses appear to be quite similar to those described in the public health literature for ARIs.

Causes

The causes of these respiratory illnesses are shown in Table 5. Because women in the four communities listed different respiratory illnesses, it is difficult to compare causes among the communities. For this reason, we present responses aggregated across the four communities in Table 5. The largest group of causes are related to cold and wet, i.e., getting cold or chilled, getting wet, and chilling the lungs. An example of this kind of cause is:

They get hit by cough by chance or because of the cold. T-19

Because the lung gets sick or when the cold comes (and the child is hit with cold air), that's it. CI-9

Children get cold, wet or chilled in several ways: being bathed in cold water, getting soaked by the rain and not changing their clothes, being "hit" by the cold air, playing in water, not wearing sufficient clothing, and having their clothes changed outside (in the cold). Many of these responses are interrelated as shown by the following response:

because of lack of care, for not taking care of them, sometimes changing them in the [cold] air and they are very delicate [weak], quickly the air enters into the *bronquios* and the illnesses begin. [Interviewer: what is it that you change in the [cold] air?] their underwear. [Interviewer: Anything else that you think causes bronchitis?] ... when they already have a cold and one washes, one touches cold water, and this makes them sick. CL-8.

In this case, it is the fact that the mother gets cold by touching cold water that makes a sick child sicker.

As Hurtado and Esquivel (1986) found in their research, some of the respondents in this study said that respiratory illnesses could be caused either by excessive cold or excessive heat, or by a change between hot and cold. For example:

The worst is because of the weather, also sometimes because there is a lot of heat, sometimes because it is very cold, or because of the change in climate I think, it's this more than anything. A lot of heat or a lot of cold yes, and they also are chilled this way... Sometimes when one bathes them like this in the air, sometimes there are mothers... I always bathe him in warm air, but there are mothers who bathe them with pure cold water and maybe the children already have this illness, then they get sick a little later on. J-5.

Excessive heat, particularly in the form of playing under the sun, was also given as a cause especially in the case of cough; several respondents noted that failure to wear a cap, and consequent burning by the sun, was a cause of the flu or cough. A few respondents mentioned that cold can also be introduced into the body by eating foods with cold qualities or by drinking cold water.

Respondents also offered a variety of other explanations not included in Table 5. In general only one or two respondents mentioned each one. Some of these responses refer to the child being born sick or having weak lungs, the mother having weak blood, the lungs not being adequately taken care of, the child not being strong, and illness as a punishment of God. Three women mentioned "contagion" as a cause of cough. One woman mentioned microbes (while describing the causes of pneumonia):

...it begins with a simple flu and no one pays attention and from there they go picking

up microbes and it increases the illness. J-M1.

In contrast to our results for diarrhea, no one gave causes of respiratory illnesses related to dirtiness, although a few respondents said that inhaling dust was a cause. The primary focus of the causal explanations, cold and chilling or changes from hot to cold, are quite similar to those of previous anthropological research in Guatemala. However, our respondents appeared to emphasize chills and cold more than changes from hot to cold. On the other hand, the causes given by our respondents are quite different from those discussed in the biomedical and public health literatures. Although explanatory theories related to cold and chilling might be seen as related to susceptibility to illness in the Mosley framework described above, the public health literature to date discounts the role of cold and chilling as predisposing factors related to respiratory infection (Stansfield and Shepard, 1993).

Most Recent Illness

The analysis above is based on answers women gave to general questions about the symptoms and causes of diarrhea and respiratory illnesses. Respondents may offer one type of answer to a general question, but harbor different beliefs about their own experience. To determine whether women give different types of answers regarding their own children's illnesses, we examined responses to a set of questions earlier in the interview about the most recent illness experienced by one of the respondent's children under age five. Women were first asked to describe the symptoms of illness exhibited by their child during this illness episode. Based on these symptoms, we classified the illnesses as respiratory, gastrointestinal, both, or other illnesses. Respiratory symptoms included any symptom involving the nose, throat, chest, or ear infections as well as illnesses which included cough, cold, flu, and other respiratory classifications reported in Table 4. Gastrointestinal symptoms included those involving the stomach and diarrhea or stomach worms, although stomach worms were almost always reported as a symptom of diarrhea. Fever was not coded separately unless it was the only symptom mentioned. The results of this classification are shown in Table 6.

As we would expect, the three most common illnesses were respiratory and gastrointestinal, followed closely by a combination of respiratory and gastrointestinal illness as part of the same disease episode. Almost all gastrointestinal illnesses reported involved diarrhea. For this reason, and because of the greater heterogeneity of respiratory illnesses, we chose to examine the causes for most recent illnesses reported as gastrointestinal (or both gastrointestinal and respiratory).

The causes given for diarrhea in the most recent illness episode are quite similar to those given in response to the general question. Most respondents said that their child's illness had been caused by the two major groups of causes shown in Figure 1 and Table 3. Although it is difficult to determine because of the relatively small number of women involved, there appear to be some differences between responses to the general question and responses about the last illness episode. First, for the last illness episode, causes related to the cold-worms-eating group were about twice as common as were causes related to dirtiness, while the two sets of causes were given with roughly equal frequency in the case of the general health belief question. Second, causes related to the sun,

heat, and fire (*fuego*) were somewhat more common for the last illness episode, as was the evil eye, although the evil eye was even in this case mentioned only by four women.

There are at least two possible reasons for the fact that dirtiness was less commonly reported as a cause in the case of the last episode than in response to the general question. The first is that even women who believe that dirtiness is a common cause of diarrheal disease in their community are less likely to believe it of themselves. Similarly, we speculate that even parents well-versed in the germ theory of disease are not as likely to attribute their child's diarrhea episode to lapses in cleanliness and consequent fecal-oral contamination as they are to say that lack of hygiene is a common cause of diarrheal illness. A second possible explanation is that women are less likely to give more traditional, or folk, explanations when asked about general causes than they are when describing their children's illness. Put another way, women may be more likely to try to give interviewers the answer they think the interviewers want when talking about general beliefs.

Discussion

In this paper we have examined the symptoms and causes of diarrhea and respiratory illness reported by women during indepth interviews in four rural Guatemalan communities. In the case of diarrhea, our results suggest that folk explanations involving the actions of stomach worms and the importance of hot and cold imbalances remain important in these communities, although few women report folk illnesses commonly cited in the literature (such as evil eye, *empacho*, and fallen fontanelle) as causes of diarrhea. We also found that lack of hygiene was reported as a cause more frequently than in earlier anthropological work in Guatemala. Women frequently cited symptoms of diarrhea that would be associated with dehydration by public health workers, even though they did not use the word *dehydration*. This finding suggests that a mechanism for public health education is to alert women that these symptoms are danger signs that warrant immediate treatment. In the case of respiratory illness, our results are consistent with earlier research both within and outside of Central America which indicates that the most frequently reported causes were related to changes in climate and being cold or chilled.

Our findings, like those of previous research, indicate that there are considerable differences between the biomedical perspective on the causes of diarrhea and ARI, and rural Guatemalan parents' health beliefs. Based on responses about health beliefs, the types of measures that women in these communities are likely to undertake to prevent diarrhea from hot-cold imbalance, arousal of stomach worms, and eating the wrong foods may fail to provide an adequate treatment for diarrhea from a biomedical point-of-view. Earlier research also suggests that the treatment that women seek for these types of diarrhea are less likely to involve modern medicine (Hurtado and Esquivel, 1986; Villatoro and Hurtado, 1985), even for children who are seriously dehydrated, because their causes are less likely to be the type that parents believe biomedicine can cure.²³

²³However, recent research by Cáceres and his colleagues suggests that some traditional herbal remedies used in Guatemala may have a significant effect on bacterial agents implicated in diarrhea and ARI (Cáceres, Figueroa, et al., 1993; Cáceres, Fletes, et al., 1993; Cáceres, Torres, et al., 1993).

Diarrhea caused by lack of hygiene, on the other hand, bears more similarities to biomedical ideas about the causes of diarrhea, although women's belief about the exact causal mechanisms may be quite different than those in the biomedical literature. Historians of the mortality decline in Europe during the 18th, 19th, and 20th centuries have suggested that personal hygiene and sanitary conditions improved not because of widespread knowledge of the germ theory of disease, but because of changing tastes and rising standards of living (McKeown, 1976). From a biomedical perspective, preventive measures based on the belief that lack of hygiene causes diarrhea are likely to be at least partially efficacious in reducing the transmission of diarrhea.

Beliefs about the causes of respiratory illness are remarkably similar to those reported in other areas of the world, including Europe and the United States. The causal mechanism underlying the belief that changes in temperature or exposure to cold are associated with respiratory illness may be linked with biomedical ideas about susceptibility to illness, but, as noted above, there is little empirical evidence supporting such a link. From a biomedical perspective, preventive measures based on these beliefs are unlikely to have any effect on the transmission of respiratory illnesses.²⁴ However, it is less clear whether these beliefs constitute a barrier to the use of biomedical treatments for respiratory illness.

An important objective of this study was to determine whether current health beliefs in the rural Guatemalan population constitute a greater barrier to the use of biomedical health care for the indigenous than the ladino population. Our results suggest that health beliefs among the indigenous and ladino population are very similar. In fact, the one substantial difference by ethnicity is that indigenous women were *more* likely to cite dirtiness as a cause of diarrhea than were ladino women.

Does the more frequent attribution of diarrhea to dirtiness, as well as less frequent mention of folk illnesses, indicate a change in health beliefs in rural Guatemala? Comparisons between our results and those of earlier studies is complicated by the fact that each study poses a somewhat different question and uses different methods of analysis. Kendall et al. (1984), in their work in Honduras, warn that while diarrhea is a commonly recognized illness, there are other folk illnesses which health workers would categorize as diarrhea, but the local population would not. To the extent that this is true, responses to questions about diarrhea may be restricted to a subset of what the biomedical profession considers as "diarrheal disease," possibly only that subset believed to be caused by less traditional factors, such as dirt and lack of hygiene. Because we asked about diarrhea (*asientos*) rather than children's illnesses more generally (as in earlier work by Hurtado and colleagues) and did not probe about different types of diarrhea (as did Burleigh et al., 1990), some

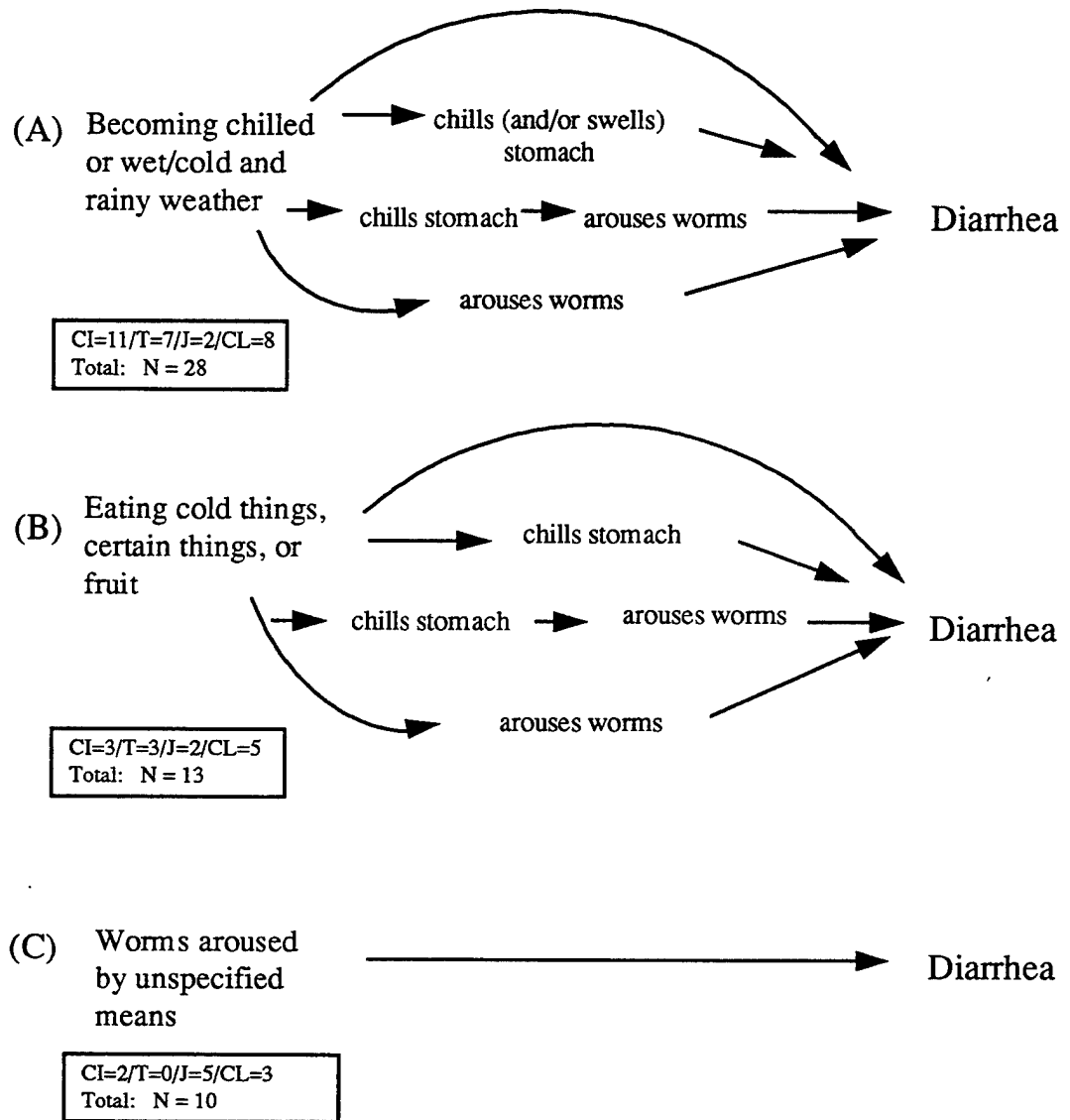
²⁴However, Escobar et al. (1987: 1265) point out that "associating 'cold' with illness could offer significant survival value. Cold injury to small children, particularly neonates, is a well described clinical entity."

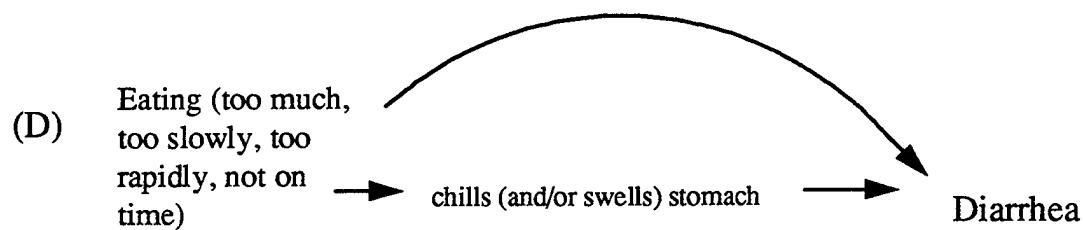
respondents may have not have included *empacho*, attacks of worms, and similar illnesses in their discussion, thereby reporting a narrower range of symptoms and causes than they may have with alternative survey instruments.²⁵

In spite of these caveats, however, comparisons of our study with results from earlier ethnographic research in Guatemala and with studies elsewhere in Latin America support the notion that health beliefs in Guatemala are evolving. Evidence from studies in Nicaragua, Costa Rica, Peru and Ecuador indicates that belief in lack of hygiene as a cause of diarrhea exists elsewhere in Latin America. The relatively high frequency of responses related to dirtiness in our study, in contrast to the absence of dirtiness in Esquivel and Hurtado's taxonomy (based on their study of childhood diarrhea in rural Guatemala), suggests a much stronger recognition of the role of hygiene today compared with the mid 1980s. At the same time, however, the growing acceptance of the importance of dirt and hygiene as causes of diarrhea may not reflect an acceptance of biomedical perspectives of illness in rural Guatemala. McKee (1987) notes that, in Ecuador, mothers' classification of *infección* as a diarrheal illness brought about by consumption of dirty or contaminated food, dirty hands, or eating heavy foods reflects a change from traditional beliefs, but their understanding of *infección* suggests that "a partial cognitive accommodation to modern medical therapies has gone forward without a true acceptance of the germ theory of disease. The folk taxonomy governing the meaning of diarrhea has changed in this *one* category of illness, but otherwise has remained intact" (McKee, 1987: 1148). While further evidence is needed to draw a definitive conclusion, we speculate that beliefs regarding causes of illness in Guatemala are undergoing similar types of change.

²⁵This hypothesis is supported by results from our focus groups: in response to general questions about the most common and the most serious illnesses affecting young children in the community, respondents mentioned worms (*lombrices*) in almost every focus group.

Figure 1
Causes of Diarrhea Related to Cold,
Stomach Worms, and Eating





CI=3/T=2/J=4/CL=3
Total: N = 12

(E) Eating bad things/
things that make
one sick

CI=3/T=2/J=7/CL=7
Total: N = 19

Eating fruit/
too much fruit

CI=4/T=0/J=2/CL=4
Total: N = 10

Eating green or
overripe fruit

CI=6/T=0/J=0/CL=2
Total: N = 8

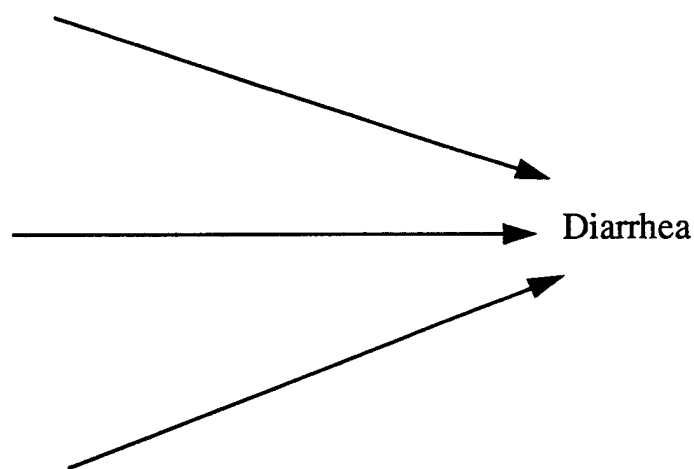


Table 1.
Taxonomy of Diarrhea Causation

| Cause | Associated Symptoms |
|--|--|
| I. Mother's condition is hot because of: | Watery diarrhea, frequent stools |
| a. physical activity | |
| b. eating "hot" foods | |
| c. pregnancy | |
| d. hot emotions (anger, sadness, fright) | |
| | |
| II. Food eaten by child: | Watery diarrhea, frequent stools, flatulence, feeling of fullness |
| a. bad food | |
| b. too much food | |
| c. did not eat on time | |
| d. excessive "hot" or "cold" food | |
| | |
| III. Tooth Eruption | Watery diarrhea, frequent stools |
| IV. Fallen Stomach | Watery diarrhea, frequent stools, green stools with mucus |
| V. Fallen Fontanelle | Watery diarrhea, frequent stools, vomiting, green stools |
| VI. Evil Eye | Watery diarrhea, frequent stools, fever |
| VII. Attack of stomach worms (<i>Lombrices</i>) | Watery diarrhea, frequent stools, worms sometimes observed in stools |
| VIII. Cold enters stomach (through feet or head) | Watery diarrhea, frequent stools, white stools |
| IX. Dysentery (from neglect of, or failure to cure, other types of diarrhea) | Watery diarrhea, frequent stools, blood in stools, uncontrollable bowel movements, stools are red or black |

Source: Adapted from Hurtado and Esquivel (1986) and Scrimshaw and Hurtado (1988)

Table 2.
Symptoms of Diarrhea

| Broad Categories of Symptoms | Indigenous Communities | | Ladino Communities | | All Communities Combined N=87 |
|--|---------------------------|-----------|--------------------|------------|--|
| | CI N=20 | T N=26 | J N=21 | CL N=20 | |
| Stool Characteristics | 9 | 13 | 7 | 11 | 40 |
| Characteristics of Elimination/Defecation | 6 | 8 | 9 | 9 | 32 |
| Stomach Symptoms | 3 | 7 | 4 | 7 | 21 |
| Dehydration | 13 | 10 | 14 | 14 | 51 |
| Other Physical Symptoms | 4 | 5 | 3 | 2 | 14 |
| Behavioral Symptoms | 15 | 11 | 7 | 10 | 43 |
| Don't Know/ Not Asked | 2 | 2 | 0 | 0 | 4 |

Table 3.

Causes of Diarrhea Related to Dirtiness or Lack of Hygiene

| Causes of Diarrhea Related to Dirtiness | Indigenous Communities | | Ladino Communities | | All Communities Combined N=87 |
|---|---------------------------|-----------|--------------------|------------|--|
| | CI N=20 | T N=26 | J N=21 | CL N=20 | |
| N of women giving any response related to dirtiness or hygiene | 14 | 18 | 10 | 10 | 52 |
| Eat/put dirty things/dirt in mouth | 7 | 12 | 7 | 0 | 26 |
| Touch/play with dirt/sand/dirty things | 4 | 3 | 0 | 0 | 7 |
| Not washing hand/dirty hands/ not bathing or washing/not washing clothes | 8 | 12 | 2 | 3 | 25 |
| Dirty water/unboiled water | 1 | 3 | 1 | 2 | 7 |
| Eat badly cooked food/ food not properly prepared | 6 | 5 | 1 | 4 | 16 |
| Flies on the food/food not protected from flies | 4 | 3 | 0 | 2 | 9 |

Table 4.

Respiratory Illnesses Mentioned by Respondents
as Common among Children in the Community

| Respiratory Illnesses Mentioned by Respondents | Indigenous Communities | | Ladino Communities | | All Communities Combined N=87 |
|---|---------------------------|-----------|--------------------|------------|--|
| | CI N=20 | T N=26 | J N=21 | CL N=20 | |
| Bronchitis (<i>Bronquitis/ Enfermedad de bronquios</i>) | 3 | 0 | 8 | 11 | 22 |
| Cough (<i>Tos</i>) | 13 | 20 | 6 | 6 | 45 |
| Cold/pulmonary cold (<i>catarro/ catarro pulmonar</i>) | 1 | 3 | 4 | 8 | 16 |
| Flu (<i>Gripe</i>) | 1 | 11 | 6 | 1 | 19 |
| Broncopneumonia (<i>Bronconeumonía</i>) | 0 | 0 | 4 | 7 | 11 |
| Pneumonia (<i>Pulmonía / pulmón / neumonía</i>) | 0 | 5 | 8 | 1 | 14 |
| Fever/temperature (<i>Fiebre/ Calentura</i>) | 8 | 17 | 0 | 1 | 26 |
| Other Illnesses | 4 | 5 | 8 | 10 | 27 |
| Don't Know/ No Response | 3 | 2 | 2 | 0 | 7 |

Table 5.
Major Causes of Selected Respiratory Illnesses Mentioned
by Respondents

| Causes | Selected Respiratory Illnesses | | | | | |
|---|--------------------------------|-------|------|-----|------------------|-----------|
| | Bronchitis | Cough | Cold | Flu | Bronco-pneumonia | Pneumonia |
| N of Resp. | 15 | 26 | 7 | 9 | 3 | 4 |
| Cold/Chill/Rain/Wet (including bathing) | 14 | 17 | 7 | 4 | 2 | 3 |
| Eat cold foods/drink cold water | 3 | 3 | 0 | 0 | 0 | 0 |
| Because of the air/being hit by the air | 4 | 4 | 0 | 0 | 0 | 1 |
| Not adequately dressed | 6 | 1 | 1 | 1 | 1 | 2 |
| Change of Climate | 0 | 1 | 1 | 2 | 0 | 0 |
| Effects of the sun | 1 | 10 | 1 | 3 | 0 | 0 |
| Heat | 1 | 1 | 2 | 1 | 0 | 0 |
| Dust | 1 | 2 | 1 | 0 | 0 | 0 |
| Dirtiness or contamination of the air | 1 | 0 | 0 | 1 | 0 | 0 |

Table 6.
Types of Illnesses Experienced by Youngest Child During
Last Illness Episode

| Type of Symptoms | Indigenous Communities | | Ladino Communities | | All Communities Combined |
|----------------------------------|------------------------|----|--------------------|----|--------------------------|
| | CI | T | J | CL | |
| N of illnesses ¹ | 23 | 28 | 21 | 22 | 94 |
| Respiratory | 5 | 9 | 10 | 9 | 33 |
| Gastrointestinal (GI) | 3 | 10 | 7 | 7 | 27 |
| Respiratory and GI | 11 | 5 | 1 | 3 | 20 |
| Temperature/Fever | 1 | 0 | 0 | 0 | 1 |
| Respiratory + GI + Eye Infection | 0 | 0 | 0 | 1 | 1 |
| Respiratory + Skin Problem | 0 | 1 | 0 | 0 | 1 |
| Respiratory + Eye Infection | 0 | 2 | 1 | 0 | 3 |
| GI + Other Symptoms ² | 3 | 1 | 0 | 0 | 4 |
| Eye Infection | 0 | 0 | 1 | 0 | 1 |
| Other ³ | 0 | 0 | 1 | 2 | 3 |

¹If mothers reported on the most recent illness of two children, the symptoms of both children are included in this table.

²1 case of GI + *susto* (a folk illness referring to shock or fright that disengages a person's spirit); 2 cases of GI + skin in CI; 1 case of GI + swelling in T.

³1 case of object lodged in the ear in J; 1 case of *corazón* (heart) — perhaps nerves or *susto* — and 1 case of stomach worms and scraped nose in CL.

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APPENDIX: INTERVIEW GUIDE
(Detailed questions only shown for sections 3 and 4)

1. Birth History

2. Problems and Care during Pregnancy, Delivery, and Post-natal Period (Questions Pertain to Pregnancy resulting in Last Live Birth)

3. Most Recent Childhood Illness (of Child <5 years old)

3.1 What was the last one of your children under the age of 5 years who got sick?

What was (s)he sick with? Tell me what happened.

(PROBE:) What else happened?

3.2 How long did this illness last?

3.3 Why do you think your child got sick?

3.4 What did you do to treat/cure your child? Who did you take him/her to?

3.5 Who gave you advice or help during your child's illness? What did this person say or do? Was the advice or help from this person helpful to you? Of all those who gave you advice or help, who gave you the most advice and/or help?

4. Beliefs about Health in the Community

4.1 Now I want to talk about something from which children frequently become sick: diarrhea. Tell me please how one can tell that a child has diarrhea.

Why do children get diarrhea?

How do you treat/cure children (who get diarrhea)?

Where do you take them or with whom do you consult when they have diarrhea?

4.2 We have already talked about diarrhea. I now would like you to tell me what illnesses of the chest or lungs children in (this community) get.

4.3 Tell me please, how does one know that a child has _____ (interviewer fills in one respiratory illness that the respondent has mentioned)?

Why do children get _____ (respiratory illness)?

How do you treat/cure children (who get this illness)?

Where do you take them or with whom do you consult when they have (respiratory illness)?

5. Social Support

6. Economic Situation of the Family

7. Background of Respondent

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